

Projectile problem 2

A ball is hit at a 65° angle upward and leaves the bat at 50 m/s . Find

a) the initial horizontal speed

21 m/s

b) the initial vertical speed

45 m/s

c) the time it takes to hit the ground

Final time to top: $a_y = -9.8$, $v_{fy} = 0$, $v_{iy} = 45$
 $0 = 45 + (-9.8)t \rightarrow t = \frac{-45}{-9.8} = 4.6 \text{ sec to top}$
 Double it for round-trip
 $t = 9.2 \text{ sec}$

d) the horizontal distance it will travel

$$d_y = v_{iy}t + \frac{1}{2}at^2 = (45)(9.2) + \frac{1}{2}(-9.8)(9.2)^2 = 207 - 404 = 103 \text{ m to top}$$

d) the horizontal distance it will travel

